CENTRIFUGAL PUMP.

BY HER MAJESTY'S

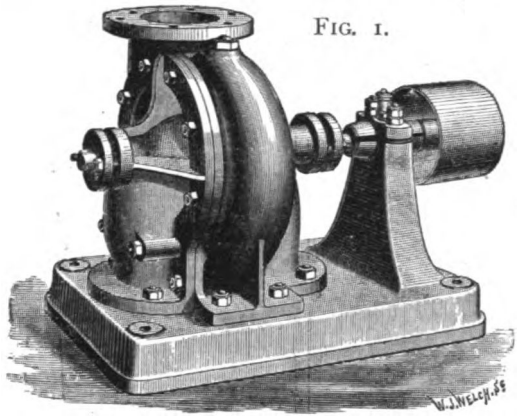

FIG. 1.

ROYAL LETTERS PATENT.

CENTRIFUGAL PUMP WITH SINGLE PULLEY.

These Pumps have been specially designed to combine the advantages of lightness, neatness, compactness, and cheapness, which will strongly recommend them to Engineers, Contractors, and other purchasers.

The special advantages are:

1st. By taking off the movable side (which is done in a few minutes), the Disc can be examined or removed without in any way disturbing the suction or delivery pipes. The advantage of this arrangement is so obvious that further remark is unnecessary.

2nd. The Suction passages being formed in the casing of the Pump itself, great neatness and compactness are secured, and the risk of drawing air is greatly reduced.

3rd. These Pumps occupy very little space compared with those of other makers. For example, the Engraving above is taken from a photograph of the 6-inch Pump, which only occupies a space about 2 feet 3 inches long, 1 foot 4 inches wide, and 1 foot 9 inches high. Whereas, the space occupied by a 6-inch Pump of the ordinary type, without the above-named improvements (and giving a lower duty in proportion to the power used), is about 2 feet 7 inches long, 2 feet wide, and 2 feet 9 inches high. The construction of the Volute differs essentially from that adopted by other Manufacturers, and has been arrived at after a series of calculations and experiments carefully conducted with a view of ascertaining the largest duty obtainable with a minimum of power and wear and tear.

See also 'Engineering,' of May 28th, 1875.

By a slight modification, these Pumps are also adapted for working down Wells; the Spindle then being vertical, and driven from the surface of the ground.

PRICES OF PUMPS, FOOT VALVES, PIPES, BENDS, AND JOINT RINGS.

Diameter of Suction and Delivery Pipe (in inches).	Approximate Quantity of Water in Gallons per Minute.	Pumps with One Standard and One Pulley. (Fig. 1.)	Pumps with Two Standards and One Pulley.	Pumps with Two Standards and Two Pulleys.	Foot Valves and Gratings.	Strong Cast-Iron Flanged Pipes.			Flanged Bends. (each.)	India-rubber Joint Rings. (each.)	Bolts, Nuts, and Washers. (per set.)
						3 ft. length.	6 ft. length.	9 ft. length.			
		£ s.	£ s.	£ s.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	s. d.	s. d.
3	75 and upwards.	12 15	14 15	16 10	1 12 6	0 6 6	0 9 8	0 14 6	0 5 10	0 8	0 10
4	200 ,,	16 0	18 10	19 5	2 5 0	0 8 3	0 14 9	1 2 0	0 7 7	0 11	1 3
5	300 ,,	21 0	24 5	25 5	3 3 0	0 11 6	1 0 0	1 10 0	0 8 3	1 2	1 6
6	500 ,,	25 0	29 0	30 0	4 0 0	0 15 0	1 5 0	1 17 3	0 15 0	1 3	2 0
8	800 ,,	34 0	39 0	41 0	5 10 0	1 5 0	2 3 6	3 2 0	1 10 9	1 9	4 6
10	1500 ,,	36 0	41 10	43 10	6 10 0	1 17 0	3 2 0	4 2 0	1 19 6	3 0	5 3
12	1800 ,,	49 0	57 0	59 0	8 10 0	2 11 6	4 12 0	5 18 0	2 13 6	4 0	6 0
15	3000 ,,	78 0	90 0	94 0	12 0 0	3 10 6	5 11 0	8 7 0	3 15 6	5 6	7 6
18	4500 ,,	100 0	115 0	120 0	16 0 0	4 5 6	6 18 0	10 3 0	5 10 0	9 0	8 6

Prices for Larger Sizes on application. *Gun-Metal Discs extra according to Size.*

LAWRENCE AND PORTER,

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GEORGE FLETCHER AND CO.,

SOLE MAKERS, MASSON WORKS, DERBY.

CENTRIFUGAL PUMPING ENGINE.

BY HER MAJESTY'S

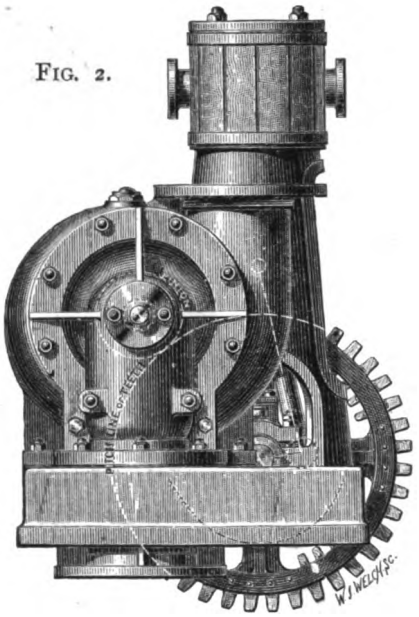

FIG. 2.

ROYAL LETTERS PATENT.

DESCRIPTION OF CENTRIFUGAL PUMPING ENGINE.

The above Illustration represents one of Lawrence and Porter's Pumps (of the construction referred to on the opposite page) combined with a Vertical Engine, the arrangement also being protected by Letters Patent. The chief features of the design are compactness and lightness, which render it peculiarly well adapted for use on Steamships or in other situations where space is limited. The construction is neat and inexpensive, and will commend itself to those having occasion to use this class of machinery.

The Engine Cylinder is mounted on a hollow taper column, open in front, so that the working parts are accessible. The Engine and Pump and their respective bearings are carried on one bed plate, and are arranged diagonally so as to occupy as little space as possible. The gearing is carried outside the Engine on the opposite side to the Pump.

In the small sizes of these Pumping Engines, the cylinder, column and bed plate are cast in one piece; but in the large sizes they are bolted together.

As the Pumps are driven by gearing, the Engine runs at a very moderate speed, which obviates the great wear and tear and frequent stoppages due to very high speeds where the working parts are reciprocating. These Pumping Engines are also arranged with the Engines horizontal, which in some cases may be more convenient.

PRICES OF PUMPING ENGINES (EITHER VERTICAL OR HORIZONTAL).

For 20 feet Lift, with Steam Pressure of 65 lb.

Diameter of Suction and Delivery Pipe (in inches).	Approximate Quantity of Water in Gallons per Minute.	Price of Pumping Engine. (Fig. 2.)	Extra if Fitted with Expansion Valve.	
		£	£	PRICES of Larger Sizes, or of the same sizes if with HIGHER LIFTS or LOWER STEAM PRESSURE, furnished on application.
6	500	130	..	
8	800	170	..	
10	1500	205	..	
12	1800	228	29	
15	3000	280	37	
18	4500	350	44	

Inquiries accompanied by *data* as to *Height of Lift*, *quantity of Water* to be raised, and *as many other particulars as possible*, addressed to the *Patentees*, MESSRS. LAWRENCE AND PORTER, 36, Parliament Street, S.W.; or to the *Manufacturers*, MESSRS. GEORGE FLETCHER AND CO., Masson Works, Derby, will receive prompt and careful attention.

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